Coho Salmon Return to Restored Streambed Near Naval Base Kitsap Bremerton

Species Swim Above Restored Culvert for First Time in Decades

JUST THREE YEARS after the completion of a major culvert restoration project near Naval Base Kitsap Bremerton, Coho salmon have been spotted above the culvert—digging a nest to lay their eggs.

The migrating salmon were discovered by John Knowles, an Engineering Technician at Naval Base Kitsap Bremerton, Public Works Department. Knowles was the restoration project manager and continues to monitor the 'naturalization' of the culvert to ensure success of the restoration. These were the first salmon seen above the culvert.

Although cutthroat trout are frequent visitors, Knowles witnessed one pair of Coho digging a nest about 500 feet upstream of the culvert. Knowles said, "It is very rewarding to see that all of our hard work is actually resulting in the production of new habitat and spawning grounds for an endangered species."

Once restoration of the stream bed and culvert were completed, the environment took over and now the streambed continues to cut down through the silt and debris that had built up in the streambed over the past 70 years by the restriction of the old culvert. Just upstream of the furthest point of the stream remediation, the streambed has dropped about six feet from where it was in September 2013. The stream continues to change all of that along with signs of lowering all the way up to the highway.

Most of the "fish rock" that the Navy installed during the stream remediation has migrated downstream below the culvert and filled in the starved areas there caused by the dam of the old 48-inch culvert. There is still a log jam about 600 feet above the culvert that is holding back a lot of good spawning gravel but it's starting to release and will soon migrate down as well. The culvert itself is doing well. Originally the stream would change channels every few weeks but it has finally settled into a more regular channel that was carved out over the winter. The erosion on the 'railroad north' side of the culvert has the inner wall exposed over two feet below the concrete but it seems to be stabilized now.

In March 2013, a Federal court ruled that fish-blocking culverts owned by the State of Washington violated Tribal Treaty Rights and by April 2015 nearly 300 culverts in the local area had been inspected. Of the 69 culverts that cross the Navy's right of way, 36 were found to have some level of fish blocking issue. All 36 culvert issues are identified and

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>
> *—John Knowles*

TOP: Coho salmon held captive in the old culvert plunge pool unable to continue upstream.

BOTTOM: Coho salmon heading upstream into recently re-opened habitat above the culvert replacement.

John Knowles

conceptual design projects to repair or restore the culverts are now awaiting funding.

The Navy and Puget Sound & Pacific Rail inspect the rail lines several times each year and also perform specific damage inspection after significant storm events. All of the railroad culverts have been assigned scores based on Washington State Department of Fish & Wildlife (WDFW) criteria and all streams passing under the railroad have been categorized as fish bearing or non-fish bearing and perennial or seasonal. WDFW has also identified species of fish that are living in the stream or pass through in migration. They rated the available habitat that would be gained upstream, quantity and quality, if the blockage was removed and also noted blockages downstream that needed to be removed to allow passage up to the Navy culverts. ⚓

For More Information

THIS STORY FIRST appeared in the fall 2014 issue of *Currents* and focused on the replacement of a culvert that had become a barrier to fish passing through to reach nesting sites above the culvert. The culvert was located 70 feet below an active Navy rail line which couldn't be taken out of service during the 13-month project. Restoration of the culvert was completed in October 2013 when the raining season and fish migration began.

You can download this story and browse the entire magazine archives at the Department of Navy's Energy, Environment and Climate Change web site at http://greenfleet.dodlive.mil/currents-magazine.

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